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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,970	06/22/2006	Hirofumi Yasuda	040302-0570	8384
22428 7590 11/14/2008 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
WOOD, JARED M				
ART UNIT		PAPER NUMBER		
4181				
MAIL DATE		DELIVERY MODE		
11/14/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/583,970

**Applicant(s)**

YASUDA ET AL.

**Examiner**

JARED WOOD

**Art Unit**

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/02)  
Paper No(s)/Mail Date 06/22/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Specification***

The disclosure is objected to because of the following informalities:

1. On page 4, the paragraphs beginning on lines 12 and 22 are identical, please delete one.
2. On page 6 lines 4 and 21, the phrase “several tens nm” should read “several tens of nm”.
3. On page 9 line 21, the phrase “thereby enabling to avoid” should read “thereby avoiding”.
4. The sentence beginning on page 10 line 10 is grammatically incorrect, please revise.
5. On page 10 line 16, the phrase “Usable as the noble” should read “The noble”.
6. On page 10 line 16, the phrase “one kind of element” should read “one element”.
7. On page 10 line 19, the phrase “optimum one among” should read either “optimum metal among” or “optimum element among”.
8. On page 10 line 20, the phrase “the like of the catalyst” should read “the type of catalyst”.
9. On page 11 line 16, the phrase “enabling to restrict” should read “restricting”.
10. On page 12 line 6, the phrase “the like of the catalyst” should read “the type of catalyst”.
11. For page 14 line 12, page 15 lines 7 and 29, page 17 line 2, page 18 line 27, and page 20 line 8, the phrase “was changed into” should read “turned”.
12. For page 14 line 13, page 16 lines 1 and 9, page 17 lines 3 and 11, page 18 line 28, page 19 line 7, and page 20 lines 9 and 16, the word “subsequently” should be removed.
13. For page 15 lines 1 and 23, page 16 lines 2 and 25, page 17 line 4, page 18 lines 21 and 29, page 19 line 8, page 20 lines 2, 10, and 18, the phrase “Mixed into cyclohexane was

polyethylene” should read “Polyethylene” and “was mixed into cyclohexane” should be added between the words “ether in” in the phrase “-nonylphenyl ether in a manner”.

14. On page 15 line 22 the word “a” should be removed.
15. On page 20 line 23, the word “thereby” should be removed.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(c), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,714,693 (Targos) in view of Training Papers Spray Drying (BUCHI Labortechnik AG, hereafter referred to as Buchi).**

**As to claim 1**, Targos teaches a method of making a catalyst composition where a reverse micelle emulsion used to provide isolated micelles of a metal ion containing solution (column 3 line 26) where the metal ions can comprise singly, or in any combination, group VIII metals such as platinum, ruthenium, and palladium (noble metals), group IB-VIIIB metals (transition metals such as Cu, Mn Co, Fe, Ni, and Zn), and Lanthanides such as lanthanum and cerium (column 5 line 25 and examples II-IV) **which also reads on claims 3, and 6-8**. The micelles are impregnated onto/into an inorganic oxide particular carrier such as alumina (column 6 line 19) (to form a catalyst precursor) **which also reads on claim 4**. The new emulsion with the carrier particles is air dried and then fired in air to oxidize the residual organics and carbonaceous deposits from the solvent and surfactant(s) (column 6 line 42).

Targos does not expressly teach spraying the catalyst precursor in an inert gas to dry the catalyst precursor.

Buchi teaches the use of spray drying as a widely applied technique for quickly drying “aqueous or organic solutions, emulsions etc.” (page 2 paragraph 1). Buchi further teaches the use of a closed cycle spray drying system which typically uses an inert gas such as nitrogen in

applications where “flammable solvents, toxic products or oxygen sensitive products are processed” (page 4 paragraph 2).

At the time of the invention, it would have been obvious to use the spray drying system taught by Buchi to dry the catalyst precursor taught by Targos to quickly dry the precursor without losing control of processing temperatures and conditions caused by rapid combustion of the solvent and/or the surfactant in the solution. The motivation for doing so would have been to accelerate the processing time by avoiding a slow air dry while maintaining control over the processing temperatures in catalyst production.

As to claim 2, Targos also teaches the use of a weight ratio range of surfactant to water of about 0.2:1 to 40:1 (column 4 line 15) which, when using a solvent such as polyethylene glycol dodecyl ether, constitutes a molar ratio range of water to surfactant of 0.5:1 to 100:1. The claimed molar ratio of water to surfactant of 20:1 is well within this range and would be an obvious optimization of the range taught in the prior art (See MPEP § 2144.05).

As to claims 9 and 10, the catalyst obtained by the obvious process is likewise, considered to be obvious. It is noted that Claim 10 is patentably identical to claim 9 and will, therefore, be considered jointly with claim 9.

**Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Targos in view of Buchi as applied to claims 1-4 and 6-10 above, and further in view of US 6,413,489 (Ying et al.).**

The process of Targos does not teach the step of carrying comprising preparing a hydroxide to be matured into an oxide forming the substrate and clathrating (surrounding) the catalytic active component by the prepared hydroxide.

Ying teaches the use of aluminum isopropoxide and barium isopropoxide to produce aluminum and barium hydroxides emulsions (column 7 line 36 and example 2) for use as a carrier for a water-in-oil emulsion to form the catalyst precursor (column 8 line 48). This method yields a high level of control of the particle size of the precursor.

At the time of invention, it would have been obvious to use the hydroxide carrier formation technique taught by Ying to control the particle size of the product taught by Targos. The motivation for doing so would be to produce particles of a significantly uniform size while avoiding costly and time consuming milling operations that result in particles of a substantially non-uniform size.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JARED WOOD whose telephone number is (571)270-5911. The examiner can normally be reached on Monday - Friday, 7:30 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JARED WOOD/  
Examiner, Art Unit 4181

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4181